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10/080,496	02/22/2002	Jozef Breka	TAZ-213	8492
26875	7590	01/08/2004	EXAMINER	
WOOD, HERRON & EVANS, LLP 2700 CAREW TOWER 441 VINE STREET CINCINNATI, OH 45202			ALEJANDRO MULERO, LUZ L	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 01/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/080,496	<b>Applicant(s)</b> BRCKA, JOZEF 
	<b>Examiner</b> Luz L. Alejandro	<b>Art Unit</b> 1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 4-6, 11-13, 19, 20, 24 and 29-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-10, 14-18, 21-23, 25-28 and 32-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

#### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

Applicant's election of species B without traverse is acknowledged.

Claims 4-6, 11-13, 19-20, 24, and 29-31 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 17-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 recites the limitation "said electrode" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claims 17 and 18 recite the limitation "the ramping of the DC power" in lines 3 and 2, respectively. There is insufficient antecedent basis for this limitation in the claim. It seems that claims 17 and 18 should be depending from claim 16 instead of claim 15.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 7-10, 15, 21-23, 25-28, and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Brcka, U.S. Patent 6,523,493 B1.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Brcka shows the invention as claimed including a plasma apparatus comprising a vacuum chamber 11, a substrate support 16 within the chamber and an inductively coupled plasma source including a dielectric window 14 in a wall of the plasma processing chamber; a coil 20 outside of the window and connected to an RF power source 21; and a deposition baffle for protecting a dielectric window in a plasma processing chamber while facilitating inductive coupling of RF energy from a coil outside of the window, through the window and baffle, and into a plasma within the chamber, comprising: an electrically conductive body 22 having a window side and a plasma side; the body having a plurality of slots 23 extending therethrough between the sides thereof; the slots having walls defined by surfaces of the body and configured to block

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line-of-sight paths through the body for particles in the chamber moving from the plasma side of the body to the window side of the body; a plurality of the slots each having a structural element therein fixed to the body on substantially only one of said sides of the body; and the elements being conductive bridges having connections to the body distributed on the baffle so as to improve the uniformity of the distribution of power coupled into the plasma through the baffle without substantially limiting the effectiveness of inductive coupling through the baffle (see figures 1-3, 6A-6E, col. 5-line 44 to col. 7-line 63).

With respect to claims 2, 9, 22, and 27, note that the slots can have chevron-shaped cross sections (see col. 4-lines 60-64). Concerning claim 3, the elements are electrically conductive bridges electrically interconnecting opposite walls of the slots on the plasma side of the body, thereby interrupting the slots on the plasma side of the body. Furthermore, note that the chamber includes a sputtering target 32.

Claims 1-2, 7-9, 15, 21-22, 25-27, and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Brcka et al., U.S. Patent 6,652,711.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Brcka et al. shows the invention as claimed including a plasma apparatus 10 comprising a vacuum chamber 11, a substrate support 20 within the chamber and an inductively coupled plasma source including a dielectric window 14 in a wall of the plasma processing chamber; a coil 18 outside of the window and connected to an RF power source 21; and a deposition baffle 16 for protecting a dielectric window in a plasma processing chamber while facilitating inductive coupling of RF energy from a coil outside of the window, through the window and baffle, and into a plasma within the chamber, comprising: an electrically conductive body having a window side and a plasma side; the body having a plurality of slots 30 extending therethrough between the sides thereof; the slots having walls defined by surfaces of the body and configured to block line-of-sight paths through the body for particles in the chamber moving from the plasma side of the body to the window side of the body; a plurality of the slots each having a structural element 79, for example, therein fixed to the body on substantially only one of said sides of the body; and the elements having connections to the body distributed on the baffle so as to improve the uniformity of the distribution of power coupled into the plasma through the baffle without substantially limiting the effectiveness of inductive coupling through the baffle (see figures 1-1D, col. 6-line 34 to col. 13-line 15).

With respect to claims 2, 9, 22, and 27, note that the slots can have chevron-shaped cross sections (see figs. 1B-1C). Furthermore, note that the substrate support 20 is operable as an electrode.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brcka, U.S. Patent 6,523,493 B1.

Brcka is applied as above but fails to expressly disclose the baffle and the coil form an RF circuit having a resonant frequency approximately at the frequency of the RF source. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the baffle and the coil to form an RF circuit having a resonant frequency approximately at the frequency of the RF source in order to ensure proper impedance matching.

Claims 16-18 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brcka, U.S. Patent 6,523,493 B1 in view of Lantsman, U.S. Patent 5,830,330.

Brcka is applied as above but fails to expressly disclose the controller programmed to control the apparatus to ignite a plasma within the plasma processing space as claimed. Lantsman discloses a controller comprising a program to control the apparatus 10 including the steps of controlling the gas flow and the pressure inside the

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chamber, energizing a coil 30 with RF power, then ramping DC power to an electrode 16, and revising and maintaining the substrate processing parameters while processing a substrate in the plasma processing space (see, for example, figs. 1 and 3, and their descriptions). Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Brcka as to further comprise a controller being programmed to control the apparatus as taught by Lantsman, because in such a way a more precise control of the process can be obtained and contamination during processing is reduced, thereby improving the processing quality. Regarding processing parameters such as the power applied to the coil and electrode, and the particular pressure within the chamber, such parameters would be optimized during routine experimentation depending upon a variety of factors such as, for example, the desired rate of processing, and would not lend patentability to the instant application absent the showing of unexpected results.

Claims 14 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brcka et al., U.S. Patent 6,652,711.

Brcka et al. is applied as above but fails to expressly disclose the baffle and the coil form an RF circuit having a resonant frequency approximately at the frequency of the RF source. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the baffle and the coil to form an RF circuit having a resonant frequency approximately at the frequency of the RF source in order to ensure proper impedance matching.



Claims 16-18 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brcka et al., U.S. Patent 6,652,711 in view of Lantsman, U.S. Patent 5,830,330.

Brcka et al. is applied as above but fails to expressly disclose the controller programmed to control the apparatus to ignite a plasma within the plasma processing space as claimed. Lantsman discloses a controller comprising a program to control the apparatus 10 including the steps of controlling the gas flow and the pressure inside the chamber, energizing a coil 30 with RF power, then ramping DC power to an electrode 16, and revising and maintaining the substrate processing parameters while processing a substrate in the plasma processing space (see, for example, figs. 1 and 3, and their descriptions). Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Brcka et al. as to further comprise a controller being programmed to control the apparatus as taught by Lantsman, because in such a way a more precise control of the process can be obtained and contamination during processing is reduced, thereby improving the processing quality. Regarding processing parameters such as the power applied to the coil and electrode, and the particular pressure within the chamber, such parameters would be optimized during routine experimentation depending upon a variety of factors such as, for example, the desired rate of processing, and would not lend patentability to the instant application absent the showing of unexpected results.

Claims 1-3, 7-10, 14-15, 21-23, 25-28, and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wicker et al., U.S. Patent 6,033,585 in view of Drewery et al., U.S. Patent 6,197,165 B1.

Wicker et al. shows the invention substantially as claimed including a plasma apparatus comprising a vacuum chamber 10, a substrate support 12 within the chamber and an inductively coupled plasma source including a dielectric window 20 in a wall of the plasma processing chamber; a coil 18 outside of the window and connected to an RF power source 19; and a deposition baffle 80 for protecting a dielectric window in a plasma processing chamber while facilitating inductive coupling of RF energy from a coil outside of the window, through the window and baffle, and into a plasma within the chamber, comprising: an electrically conductive body having a window side and a plasma side; the body having a plurality of slots 84,86,88,90,92 extending therethrough between the sides thereof; the slots having walls defined by surfaces of the body; a plurality of the slots each having a structural element therein fixed to the body on substantially only one of said sides of the body (note that many of the slots do not traverse the length of the baffle 80); and the elements being conductive bridges having connections to the body distributed on the baffle so as to improve the uniformity of the distribution of power coupled into the plasma through the baffle without substantially limiting the effectiveness of inductive coupling through the baffle (see figures 1-7 and col. 5-line 22 to col. 8-line 53).

Wicker et al. fails to expressly disclose the slots being configured to block line-of-sight paths through the body for particles in the chamber moving from the plasma side of the body to the window side of the body, the slots having chevron-shaped cross sections. Drewery et al. discloses providing a baffle with slots 71 that have an angular bend in a chevron shape in order to prevent material from impacting the dielectric window (see col. 8-lines 1-12). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Wicker et al. so as to include chevron shaped slots in the baffle because in such a way the dielectric window will be preventing from having impurities deposited on its surface, thus improving the performance of the apparatus.

Furthermore, regarding claims 14 and 32, Wicker et al. fails to expressly disclose the baffle and the coil form an RF circuit having a resonant frequency approximately at the frequency of the RF source. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the baffle and the coil to form an RF circuit having a resonant frequency approximately at the frequency of the RF source in order to ensure proper impedance matching.

Additionally, note that the substrate support 12, of the apparatus of Wicker et al., is operable as an electrode.

Claims 16-18 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wicker et al., U.S. Patent 6,033,585 in view of Drewery et al., U.S.

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Patent 6,197,165 B1, as applied to claims 1-3, 7-10, 14-15, 21-23, 25-28, and 32-33 above, and further in view of Lantsman, U.S. Patent 5,830,330.


Wicker et al. and Drewery et al. are applied as above but fail to expressly disclose the controller programmed to control the apparatus to ignite a plasma within the plasma processing space as claimed. Lantsman discloses a controller comprising a program to control the apparatus 10 including the steps of controlling the gas flow and the pressure inside the chamber, energizing a coil 30 with RF power, then ramping DC power to an electrode 16, and revising and maintaining the substrate processing parameters while processing a substrate in the plasma processing space (see, for example, figs. 1 and 3, and their descriptions). Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Wicker et al. modified by Drewery et al., as to further comprise a controller being programmed to control the apparatus as taught by Lantsman, because in such a way a more precise control of the process can be obtained and contamination during processing is reduce, thereby improving the processing quality. Regarding processing parameters such as the power applied to the coil and electrode, and the particular pressure within the chamber, such parameters would be optimized during routine experimentation depending upon a variety of factors such as, for example, the desired rate of processing, and would not lend patentability to the instant application absent the showing of unexpected results.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 571-272-1430. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills can be reached on 571-272-1439. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

  
Luz L. Alejandro  
Primary Examiner  
Art Unit 1763

December 29, 2003